

**Diagnoses and remarks on the genera of Tortricidae (Lepidoptera).
Part 1. Phricanthini, Tortricini, and Schoenotenini**

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ABSTRACT. Diagnoses, redescriptions, and remarks are presented on the genera that comprised the three tortricid tribes Phricanthini (3 genera), Tortricini (38 genera), and Schoenotenini (30 genera). Original references, type species, synonymies, and zoogeographic regions are provided.

KEY WORDS: Lepidoptera, Tortricidae, genera, diagnoses, descriptions.

INTRODUCTION

The number of genera of Tortricidae has increased dramatically over last 40 years; by 2007 there were over 1630 described genera, including synonyms. Many of the older descriptions are scattered throughout the literature, and because there are few larger synthetic treatments of the tortricids for most major biogeographic regions, this large number of taxa complicates considerably the work of taxonomists on the faunas of poorly known regions of the planet. In addition, characters that define many of the genera are not clearly articulated. The distribution of many genera is still insufficiently known, and this shortcoming frequently results in unexpected findings, e.g., the discovery of Afrotropical genera in the Neotropics. These types of discoveries may cause confusion for specialists that focus on the fauna of a single geographic region.

The literature abounds with re-descriptions and diagnoses of tortricid genera, but many are rather short, frequently lacking comparisons with similar or related taxa. Detailed com-

parative diagnoses are not only useful in systematic work but are required by the International Code of Zoological Nomenclature (1999) for descriptions of new taxa.

In this proposed series of papers on the tortricid genera, diagnoses are based on features provided in the original description, augmented by comments from subsequent papers. My own diagnoses are proposed when no earlier ones are available. Other characteristics of the genera are included when necessary or relevant.

Morphological features that define many genera require revision and/or augmentation. Also, definitions of some genera require brief comments. Some original diagnoses are quoted verbatim, especially when no subsequent evaluation has been done.

The goal of this series of papers is present a compilation of the existing data on tortricid genera and to identify what is known and where information is incomplete or lacking.

The account for each genus consists of the original reference, type-species (t. sp.) with the countries of origin (in case of large countries also with their provinces, or large islands), the number of species included originally (e.g., monotypic), and the number of species known at present, the latter often based on the catalogue by BROWN (2005). The acronyms of the zoogeographic regions are added. The synonymies are treated in a similar way; the older, well known synonymies easily found in the literature are cited in a shortened form, i.e., without references. The references refer to re-descriptions and diagnoses. The genera are arranged alphabetically which simplifies the index to include only synonymies.

The parts of this series will be published in non-systematic order, depending on the sequence of completion of each group.

Abbreviations for the zoogeographic regions are as follows:

AFR - Afrotropical, AU - Australian, IOL - Holarctic, NEA - Nearctic, NEO - Neotropical, OR - Oriental, PAL - Palaearctic.

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SYSTEMATICS

Phricanthini

Denaeantha DIAKONOFF, 1981

Denaeantha DIAKONOFF, 1981, Proc. Konin. Neder. Akad. Wet., C84(2): 160; t. sp.: *Phricanthes nivera* DIAKONOFF, 1941, Indonesia: Java; monotypic. OR.

Diagnosis

Denaeuntha was originally separated from *Phricanthes* ("although it is related"). It can be distinguished from the latter by the terminal part of its gnathos arm with a dense group of blunt spines. The aedeagus is very large; the saccus is very long and slender; and the venation is as in *Scoliopecta* with forewing veins R4-R5 separate (stalked in *Phricanthes*). The female genitalia of the type species resemble the Australian *Scoliopecta graea* TURNER, 1916, but they have a signum.

Phricanthes MEYRICK, 1881

Phricanthes MEYRICK, 1881, Proc. Linn. Soc. N.S.W., 6: 636; t. sp.: *Phricantes asperana* Meyrick, 1881, Australia: New South Wales; monotypic; now 10 species included. AU/OR/AFR.

Protypanthes MEYRICK, 1933, Exotic Microlepid., 4: 424; t. sp.: *Protypanthes hybristis* MEYRICK, 1933, Indonesia: Java; monotypic.

Protyphanthes DIAKONOFF, 1939, Zool. Meded., 21: 192 (misspelling of *Protypanthes*).

Australacleris DIAKONOFF, 1970, Annls Soc. Ent. Fr. (N.S.), 6: 995; t. sp.: *Australacleris memorabilis* DIAKONOFF, 1970 (= *P. flexilineana* WALKER, 1863), Seychelles.

DIAKONOFF (1941, 1951), COMMON (1965) - redescrptions.

Diagnosis

COMMON (1965) compared *Phricanthes* with *Scoliopecta*; the two share a similar development of the socii with broad bases and bifid terminal parts, the presence of a saccus, and a scent organ on abdominal tergum four. Differences in venation are the stalked forewing veins R4-R5 in *Phricanthes*, which are separate in *Scoliopecta*. DIAKONOFF (1970) described *Australacleris* as "a peculiar novel form, perhaps allied with *Accra* RAZOWSKI, 1964 [Tortricini] but differing considerably by wing neuration and male genitalia..."

Scoliopecta MEYRICK, 1881

Scoliopecta MEYRICK, 1881, Proc. Linn. Soc. N.S.W., 6: 646; t. sp.: *Scitaphila comptuna* WALKER, 1863, Australia: New South Wales; monotypic; now seven species. AU.

Neurospades TURNER, 1945, Trans R. Soc. S. Austral., 69: 72; t. sp.: *Neurospades anagaura* TURNER, 1945 (= *Scoliopecta molybdantha* MEYRICK, 1910), Western Australia; monotypic.

COMMON (1965) - redescription.

Diagnosis

COMMON (1965) compared *Phricanthes* with *Scoliopecta* (cf. *Phricanthes*), finding several similarities but only one difference: in the forewing R4-R5 are separate in *Scoliopecta* and stalked in *Phricanthes*. I can find no additional differences.

Tortricini

Accra RAZOWSKI, 1964

Accra RAZOWSKI, 1964, Acta zool. cracov., 9(5): 402; t. sp.: *Argyrotoxa viridis* WALSINGHAM, 1891, Ghana; two species included. AFR.

RAZOWSKI (1966, 2004) - redescrptions.

Diagnosis

In the original diagnosis, *Accra* is compared with *Polemograptis*: the two genera have similar facies, and in the female genitalia the ductus bursae and corpus bursae are similar. The following characters are regarded as autapomorphies of *Accra*: the very slender, arch-shaped, rigid transtilla; the spiny cucullus; the elongate distal part of the valva probably representing a brachiola; the horn-like cornutus; the presence of a sac situated just before the ostium bursae; and the very broad ostium bursae.

Acleris HÜBNER, [1825]

Acleris Hübner, [1825], Verz. bekannter Schmett.: 384; t.sp.: [*Tortrix*] *aspersana* Hübner, [1817], Europe; at present 140 species included. PAL/NEA/OR/AFR.

RAZOWSKI (1987, 2002, 2008) - redescrptions, synonymies: *Peronea* CURTIS, 1824; *Lopas* HÜBNER, [1825]; *Rhacodia* HÜBNER [1825]; *Eclectis* HÜBNER, [1825]; *Teleia* HÜBNER, [1825]; *Oxigrapha* HÜBNER, [1825]; *Croesia* HÜBNER, [1825]; *Leptogramma* STEPHENS, 1829; *Glyphisia* STEPHENS, 1829; *Cheimatophila* STEPHENS, 1829; *Argyrotoxa* STEPHENS, 1829; *Teras* TREITSCHKE, 1829; *Phloiophila* DUPONCHEL, 1834; *Glyphiptera* DUPONCHEL, 1835; *Phylacophora* FILIPJEV, 1931; *Ergasia* ISSIKI & STRINGER, 1932.

Diagnosis

RAZOWSKI (2008) stated that „The putative autapomorphies of *Acleris* are the presence of strong apical lobes of tegumen armed with dorsal or lateral prominences and the presence of ventroterminal process of the tuba analis." *Acleris* was compared with *Spatalistis* (in the diagnosis of that genus) from which it differs in the separate veins, the atrophy of the uncus, the rather uniformly hairy disc of the valva, and the broad base of the brachiola.

Aleimma HÜBNER, [1825]

Aleimma HÜBNER, [1825], Verz. bekannter Schmett.: 391; t. sp.: [*Tortrix*] *plumbana* HÜBNER, [1796-99]; Europe; monotypic. PAL.

RAZOWSKI (1987, 2008) - redescrptions, synonymy: *Dictyopteryx* STEPHENS, 1829.

Diagnosis

According to RAZOWSKI (2008) *Aleimma* is "A monobasic genus, similar to *Tortrix* but the spined termination of sacculus long and slender, and brachiola rudimentary, outer; the signum a folded plate, the area of nail-shaped setae of labium oblique."

Algoforma RAZOWSKI, 2005

Algoforma RAZOWSKI, 2005, Polskie Pismo entomol., 74(4): 497; t.sp.: *Teras Acleris algoana* FELDER & ROGENHOFFER, 1875, Republic of South Africa; two species included. AFR.

Diagnosis

In the original diagnosis, *Algoforma* is compared with *Apotoforma*. The two genera share the unusual shape of the fore- and hindwing, wing venation, the presence of a process of the sacculus, a broad brachiola, and some other characters. The two genera share a synapomorphic reduction of the apophyses anteriores and a subdivision of the papilla analis, but these features are shared with a few allied genera (e.g., *Pseudeboda*). *Algoforma* has an elaborate uncus with postmedian lateral bristled folds accompanied by two minute median processes, an ill-defined subscaphium, and bifid upper process of the sacculus. The female genitalia are compared with *Pseudeboda* and *Brachiolia* (RAZOWSKI 2005a).

Amboyina RAZOWSKI, 1964

Amboyina RAZOWSKI, 1964, Acta zool. cracov., 9(5): 383; t. sp.: *Amboyina furcifera* RAZOWSKI, 1964, *Amboyina*; monotypic; now two species known. AU.

COMMON (1965), RAZOWSKI (1966) - redescrptions.

Diagnosis

Amboya was described on basis of the following supposed autapomorphies: broad, bifurcate end of the sacculus; brachiola oval, constricted basally; socii erect, not coalesced; and a pair of cornuti with plate-shaped bases. COMMON (1965) compared it with *Anameristis* and *Eboda*; RAZOWSKI (1966) with *Brachiolia* (uniform breadth of forewing and rounded apex of forewing, and venation as in allied genera) (see *Apotoforma*). Other characters include a membranous tuba analis and a produced end of the costa of the valva. The female is unknown.

Anaccra RAZOWSKI, 1990

Anaccra RAZOWSKI, 1990, Acta zool. cracov., **33**: 579; t. sp.: *Accra limitana* RAZOWSKI, 1966, Cameroon; two species included. AFR.

RAZOWSKI (2004) - diagnosis.

Diagnosis

This genus was proposed on the basis of the small, proximally rounded sterigma, which was hypothesized to represent an autapomorphy distinguishing it from *Accra*. Another difference is the plesiomorphic colouration, without red markings of the forewing (RAZOWSKI 2004). The male remains unknown.

Anameristis COMMON, 1965

Anameristis COMMON, 1965, Aust. J. Zool., **13**: 646; t. sp.: *Anameristis cyclopleura* COMMON, (1965), Australia; Queensland; monotypic. AU.

Diagnosis

In the original description, it is mentioned only that this genus belongs to the *Eboda* group. *Anameristis* is closest to *Exeristeboda* based on wing venation, shape of sacculus, and the transtilla. The aedeagus and cornuti are similar to several other genera of the *Eboda* group; the female remains unknown. *Anameristis* differs from *Exeristeboda* in its very long, slender socii; the gnathos, which are "united medially by broad transverse band, dentate laterally"; the slender, not arched transtilla (not seen in the original drawing); and four cornuti in the vesica. Further differences are the shape of the uncus and subscaphium, as one can deduce from the original illustration.

Apotoforma BUSCK, 1934

Apotoforma BUSCK, 1934, Ent. Am. (N.S.), **13**: 153; t. sp.: *Oxygrapha rotundipennis* WALSHINGHAM, 1897, West Indies: St. Thomas; monotypic. 13 species known. AFR/NEA/NEO.

Emeralda DIAKONOFF, 1960, Verh. kon. ned. Akad. Wet., (2) **53**(2): 190; t. sp.: *Emeralda cimelia* DIAKONOFF, 1960, Madagascar.

RAZOWSKI 1960, 1964, 2004 - redescrptions.

Diagnosis

Putative autapomorphics of this genus are the presence of lateral lobes of the sterigma, the reduction or absence of the apophyses anteriores, and the development of the rod-like sclerite of the tuba analis. The membranous division of papilla analis into two parts, the de-

sclerotization of the upper part of the aedeagus, and the absence of vein M2 are considered synapomorphies with the genera of the *Eboda*-group (listed with *Eboda*).

Archigraptis RAZOWSKI, 1964

Archigraptis RAZOWSKI, 1964, Acta zool. cracov., 9(5): 401; t. sp.: *Archigraptis lima-*
cina RAZOWSKI, 1964, Karen Hills, India; monotypic. Now 6 species included. OR.

RAZOWSKI (1966), TUCK (1988) - redescrptions.

Diagnosis

In the original description, *Archigraptis* is compared with *Polemograptis*, which has similar colouration of the forewing (i.e., red pattern). In the diagnosis by RAZOWSKI (1966), differences in the genitalia, especially the brachiola which is well developed in *Archigrap-*
tis, are added. Additional diagnostic characters are the wing venation: in *Archigraptis* M2-M3-Cu1A are connate whilst in *Polemograptis miltocosma* MEYRICK, 1910 M2 is absent and M3-Cu1A stalked; the socii are rigid and lateral in *Archigraptis*; the brachiola is plesiomorphic; and the tuba analis has a lateroterminal processes. The female characterizes with small, weakly sclerotized sterigma fused with subgenital sternite and lack of signum.

Asterolepis RAZOWSKI, 1964

Asterolepis RAZOWSKI, 1964, Acta zool. cracov., 9(5): 398; t. sp.: *Tymbarcha glycera*
MEYRICK, 1910, Australia; Queensland; monotypic. AU.

Diagnosis

In the original diagnosis, *Asterolepis* is compared with *Sclerodisca*. *Asterolepis* differs in the sacculus and dorsal edge of the valva; RAZOWSKI (1966) adds that *Sclerodisca* differs in lacking a brachiola and in wing venation, i.e., in the forewing of *Asterolepis* the three last radial veins are stalked. Further important characters are mentioned with *Sclerodisca*. COMMON (1965) regarded it as the most specialized Australian genus of Tortricini.

Beryllophantis MEYRICK, 1938

Beryllophantis MEYRICK, 1938, Trans. Roy. Ent. Soc. London, 87: 509; t. sp.: *Beryllo-*
phantis cochlias MEYRICK, 1938, Papua New Guinea; monotypic; now seven species, all from New Guinea. AU.

DIKONOFF (1953), RAZOWSKI (1966), HORAK & SAUTER (1979) - redescrptions.

Diagnosis

DIKONOFF (1953) stated that *Beryllophantis* is close to *Argyrotoxa* STEPHENS (a synonymy of *Acleris*) and placed it in Cnephasiidi (= Cnephasiini); RAZOWSKI (1966) trans-

ferred it to Tortricini. According to HORAK & SAUTER (1979) the genus has an intermediate position between *Spatalistis* and *Tymbarcha*. In *Berylllophantis* and *Tymbarcha* forewing veins R4-R5 are stalked whilst in *Spatalistis* they are separate; the sacculus usually has a spined termination, and the sterigma and signum are shaped differently. In *Tymbarcha* the brachiola is broad, whereas in the two mentioned genera it is slender.

***Brachiolia* RAZOWSKI, 1964**

Brachiolia RAZOWSKI, 1964, Acta zool. cracov., 9(5): 383; t. sp.: *Tinea egenella* WALKER, 1864, Sri Lanka; two species included. At present two species in Nigeria, South Africa, and Seychelles, and one Oriental species. OR/AFR.

RAZOWSKI (1966, 2004) - redescriptions.

Diagnosis

Originally mentioned as related to *Pseudeboda* based on the strong tegumen, presence of an uncus, the atrophied subscaphium, membranous tuba analis, and vestigial socii. The two differ in that *Brachiolia* has a single capitate cornutus. RAZOWSKI (1966) compared *Brachiolia* with *Apotoforma*, with which it shares the shape of some parts of male and female genitalia, e.g., strongly reduced, broad apophyses anteriores. Additional characters include the large, strongly sclerotized, bifurcate uncus fused with remnants of the socii; the large, free termination of the sacculus armed with two groups of spines; the presence of a hairy process of the sacculus situated anteriorly to groups of spines; and the presence of a large process at the ostium bursae, all of which are putative autapomorphies for *Brachiolia*. See also *Pseudeboda*.

***Cnesteboda* RAZOWSKI, 1990**

Cnesteboda RAZOWSKI, 1990, Acta zool. cracov., 33(28): 581; t. sp.: *Eboda assamica* RAZOWSKI, 1964, India: Assam; eight species included distributed from India and China to Java and Bali. OR.

Diagnosis

Cnesteboda was originally compared to *Eboda* (similar uncus complex; similar aedeagus, often with membranous dorsum and two cornuti; slender brachiola; broad spiny termination of sacculus; processes of disc of valva often fused with sacculus; cup-shaped part of sterigma with transverse sclerites; shortened apophyses anteriores). *Cnesteboda* also is similar to *Exeristeboda* and *Paratorna*. Supposed autapomorphies of *Cnesteboda* are the shape of the transtilla (if developed, in the type-species it is a plate-shaped concave sclerite in the anellar membrane probably representing the henion); the presence of a long sclerotic process of the outer wall of the valva originating beyond the costa, with a setose termination; the shape of the termination of the sacculus situated near a spined termination; and an

ill-defined fold of the valva marked with strong bristles. A membranous connection between the anterior and posterior parts of the sterigma are common to *Cnesteboda* and *Eboda*. The diagnosis by RAZOWSKI (2008) discusses the majority of the above characters.

Cornesia RAZOWSKI, 1981

Cornesia RAZOWSKI, 1981, Acta zool. cracov., **25**(14): 332; t. sp.: *Cornesia ormoiperla* RAZOWSKI, 1981, Nigeria; monotypic. Actually known of two species. AFR.

RAZOWSKI (2004, 2005a) - redescrptions.

Diagnosis

RAZOWSKI (2005a) provides the following details: the structure of the valva complex is similar to that of *Nephograptis*; the tegumen is similar to that of *Nephograptis* and *Sanguinograptis*; and the shape of the signum resembles that of *Plinthograptis* and its allies, but is more specialized.

Supposed autapomorphies are the presence of lateral lobes of the tegumen (pedunculi), the very long blade of the signum, and the cup-shaped proximal part of the sterigma. Forewing colouration is plesiomorphic, cryptic, and without red apomorphic markings.

Eboda WALKER, 1866

Eboda WALKER, 1866, Cat. Lepid. Heter. Colln Br. Mus., **35**: 1804, t. sp.: *Eboda smaragdinana* WALKER, 1866, New Guinea; now 5 species distributed from India and Sri Lanka to New Guinea and Admiralty Islands. OR/AU.

RAZOWSKI (1966, 1990) - redescription.

Diagnosis

DIKONOFF (1939) hypothesized that *Eboda* is "correlated with *Tymbarcha* but is more specialised". It is now apparent that *Eboda* is closely related to *Exeristeboda*. *Eboda* and *Exeristeboda* are characterized by a broad uncus (terminal part of tegumen). In *Eboda*, the socii are in the form of rigid, hairy hooks and less strongly sclerotized proximal lobes; the setae of the lower lobes of socii are very long, and a spine-like process extends from the base of posterior parts of socii; there is a postmedian process of costa of valva; there is a very long, slender, membranous process from the upper base of disc accompanying pulvinus; the slender sacculus has a free termination provided with an apical spine; and the antevaginal part of sterigma is short and rounded. The rounded, short hairy pulvinus, the long moderately broad brachiola, and the large scent organs situated at the genital apparatus are probable synapomorphies of *Eboda* and *Exeristeboda*. A membranous connection between the cup-shaped part of sterigma and its posterior arms are putative synapomorphies for *Eboda* and *Cnesteboda*. To the *Eboda*-group of genera belong *Amboyna*, *Brachiotia*, *Cnesteboda*, *Eboda*, *Exeristeboda*, *Paratorma*, and *Pseudeboda*.

Exeristeboda RAZOWSKI, 1990

Exeristeboda RAZOWSKI, 1990, Acta zool. cracov., **33**(28): 581; t. sp.: *Eboda exeristis* MEYRICK, 1910, Australia: Queensland; monotypic. At present two Australian species included. AU.

Diagnosis

Exeristeboda was originally compared with *Eboda* from which the former differs in the slenderer uncus; the completely reduced ventral part of the socius; the absence of a median process of the costa of valva, but with a setose, spined termination (at least in *exeristis*); and a rather uniformly sclerotized, oval sterigma.

Herotyda RAZOWSKI, 1971

Herotyda RAZOWSKI, 1971, Acta zool. cracov., **16**: 548, n. nov. for *Dohertya* RAZOWSKI, 1966. OR.

Dohertya RAZOWSKI, 1966, World Tortricini: 86; t.sp.: *Dohertya minuta* RAZOWSKI, 1966, Borneo; monotypic. Nom. praecoc. by *Dohertya* HAMPSON, 1894 in Arctiidae. OR.

Diagnosis

The original description (RAZOWSKI 1971) states that *Herotyda* is closely related to *Polemograptis*, sharing a slender ductus seminalis and a plate-shaped signum. *Herotyda* can be distinguished by its slender hindwing and shortened veins. Colouration, papilla analis, and anterior apophyses are plesiomorphic in *Herotyda*. The sterigma is short with ventro-lateral lobes, and these states are considered autapomorphies.

Nephograptis RAZOWSKI, 1981

Nephograptis RAZOWSKI, 1981, Acta zool. cracov., **25**(14): 330; t. sp.: *Nephograptis necropina* RAZOWSKI, 1981, Nigeria; monotypic. AFR.

RAZOWSKI (2004) - redescription.

Diagnosis

Nephograptis was described on the basis of the following putative autapomorphies: the minutely spined tuba analis; the long, postbasally narrowing valva, and the long sacculus terminating in a claw. RAZOWSKI (2005a) compared it with *Cornesia*. *Nephograptis* also may be related to *Rubrograptis* and *Sanguinograptis* as the three share a similar shape of the tuba analis. From *Rubrograptis* it differs mainly in the long, slender valva; and from *Sanguinograptis* it differs in the configuration of the socius (the valvae of the two are similar). The shape of the coecum penis is characteristic of a few genera (e.g., *Russograptis*, *Plinthograptis*, *Panegyra*, *Rubrograptis*); it is more or less directed or concave distally.

Panegyra DIAKONOFF, 1960

Panegyra DIAKONOFF, 1960, Verh. Konin. Ned. Akad. Wet., (2)53(2), 204, t. sp.: *Panegyra cosmophora* DIAKONOFF, 1960, Madagascar; monotypic. AFR.

Heterograptis RAZOWSKI, 1981, Acta zool. cracov., 25(14), 326; t. sp.: *Heterograptis sectatrix* RAZOWSKI, 1981, Nigeria; monotypic.

RAZOWSKI (2004, 2005b) redescrptions.

Diagnosis

Both descriptions lack a comparative diagnosis. DIAKONOFF (1960) included *Panegyra* in Chlidanotinae. He only mentioned that *Cathelotis* MEYRICK, 1926 "originally incorporated in the 'Chlidanotidae' should be transferred to the Copromorphidae" what is not a comparison with *Panegyra*.

This genus (cf with *Heterograptis*) was described on the basis of the following supposed autapomorphies: the presence of setae of the valva; the lateroterminal position of the socius, the wedge-shaped or elongate, strongly sclerotized socius, and the rod-like distal process of the subscaphium. This genus is comparable with *Sanguinograptis* as the latero-posterior position of the socius and the shape of the valva show; *Panegyra*, however, with strong setae from costa of valva.

Paracroesia YASUDA, 1972

Paracroesia YASUDA, 1972, Bull. Univ. Osaka Pref., (B)24: 88; t. sp.: *Epagoge abievora* ISSIKI, 1961, East Russia; Japan: Honsyu, PAL.

Dantilevskiana KUZNETZOV, 1973; t. sp.: *Dantilevskiana pusilla* KUZNETZOV, 1973 – *Epagoge abievora* ISSIKI, 1961, East Russia; Primorsk.

Diagnosis

According to RAZOWSKI (2008), *Paracroesia* is "A monotypic genus of uncertain affinities; externally resembling some species of *Acleris*; in the genitalia more similar to *Atemna* especially in regards to sternum and the shape of the signum. The supposed autapomorphies of *Paracroesia* are the presence of a basal wart of the socius and the shape of the tuba analis."

Paratorna MEYRICK, 1907

Paratorna MEYRICK, 1907, J. Bombay Nat. Hist. Soc., 17: 980, t. sp.: *Paratorna dorcas* MEYRICK, 1905, India: Assam; monotypic. Now 8 species known from India to Philippine Islands, Russia: Primorsk, Japan and China. PAL/OR

Diagnosis

RAZOWSKI (1964) compared *Paratorna* with *Eboda* from which it differs in venation (fused hindwing veins M3-CuA1) and genitalia (sacculus forming broad termination often with additional projection, brachiola very large, socii more or less reduced). The diagnosis by RAZOWSKI (2008) adds that the "elongate-oval forewing of *Paratorna* is similar to that in several tropical genera (e.g., *Apotoforma*, *Cnesteboda*); in both pairs of wings the last median vein is stalked with CuA1 as in *Spatalistis*. The supposed autapomorphies of *Paratorna* are the broad spined termination of the sacculus, the broad terminal part of the costa of the valva, and the shape of the aedeagus, with its slender ventral termination and well sclerotized dorso-posterior edges

Pareboda RAZOWSKI, 1966

Pareboda RAZOWSKI, 1966, World Tortricin. 88; t. sp. *Pareboda prosecta* RAZOWSKI, 1966, New Guinea, monotypic. AU

Diagnosis

In original description RAZOWSKI (1966) mentioned that *Pareboda* is somewhat similar to members of the *Polemograptis*-group of genera based on the shapes of the transtilla tegumen, and female genitalia, and its type species externally resembles some *Eboda* species. *Pareboda* is similar to *Eboda*, *Pseudeboda*, *Apotoforma*, and their allies, especially in the shape of wings and venation (forewing veins M3-CuA1 stalked, in hindwing M2 missing); the costal edge of the hindwing is strongly expanded as in *Sclerodisca*. In the shape of transtilla it resembles *Polemograptis* and *Accra*. *Pareboda* is characterized by the following autapomorphies: the broad, oval valva; the rounded plate-shaped cornuti; and the small patch-like socii. The large uncus and moderate apophyses anteriores are probably plesiomorphic.

Plinthograptis RAZOWSKI, 1981

Plinthograptis RAZOWSKI, 1981, Acta zool. cracov. 25(14): 324; t. sp.: *Plinthograptis rhytisma* RAZOWSKI, Nigeria; three species. Now 6 Nigerian species included. AFR.

Diagnosis

RAZOWSKI (2004) compared *Plinthograptis* to *Rubrograptis* and *Russograptis*, identifying the strongly distally-curved coecum penis as a synapomorphy for the three; this character is also shared with *Nephograptis*. The description of the genus was based on the following putative autapomorphies: the presence of minute dorsoterminal spines of socii, the double prominence of the top of tegumen, and probably the membranous median part of transtilla

Polemograptis MEYRICK, 1910

Polemograptis MEYRICK, 1910, Trans. Ent. Soc. London, 1910: 432; t. sp.: *Polemograptis multocosma* MEYRICK, 1910, Borneo, monotypic; now three species included. OR. TUCK (1988) - redescription.

Diagnosis

Although *Polemograptis* was described on the basis of the unusual habitus (i.e., red forewing pattern) and venation (all forewing veins separate, hindwing with M3 CuA1 stalked or connate), the red forewing pattern is now known to be shared by several tropical Tortricini genera. TUCK (1988) writes that "*Polemograptis* is readily separable from *Archigraptis* by the relatively short labial palpi and yellow or orange stripe along forewing costa "

Pseudeboda RAZOWSKI, 1964

Pseudeboda RAZOWSKI, 1964, Acta zool. cracov, 9(5), 380; t. sp.: *Pseudeboda africana* RAZOWSKI, 1964 - South Africa; originally two species included (Republic of South Africa, Gambia) AFR

RAZOWSKI (1966-2004) - redescrptions.

Diagnosis

This genus was compared originally with *Apotoforma*, from which it differs in the shapes of the sacculus and the socii. RAZOWSKI (2004) compared it with *Brachiola* (the shared presence of a large, slender brachiola) and *Apotoforma* (the shared presence of the process of transtilla). The genus was described on the basis of the following supposed autapomorphies: the rounded uncus fused with slender socii; the large, thorny sacculus; and the slender anterolateral process of sterigma. An additional characters are the proximal position of the subdorsal process and an additional slender, more ventral sac and very strongly shortened basal part of valva with completely atrophied hairy disc. The tuba analis is similar to that of *Apotoforma*, with a long, broad terminally subscaphium, the ventral part of the sterigma well separated from posterior part; the anterior apophyses reduced, and the proximal portion of papilla analis membranously connected with the posterior part. Forewing veins M3-CuA1 are stalked as in *Apotoforma*, *Eboda*, *Paratorna*, and their allies

Pseudocroesia RAZOWSKI, 1966

Pseudocroesia RAZOWSKI, 1966, World Tortricini: 145; t. sp.: *Pseudocroesia coronaria* RAZOWSKI, 1966, China, Shaanxi; monotypic. PAL.

RAZOWSKI (2008) - redescription

Diagnosis.

In the original description, *Pseudocroesia* was compared with *Croesia* (– *Acleris*) and *Paratorna*. *Pseudocroesia* differs from them in the peculiar shape of the valva. The diagnosis by RAZOWSKI (2008) is as follows: "A monobasic genus with facies similar to *Acleris conchyloides* (WALSINGHAM, 1900) but easily distinguished from all Palaearctic genera by the short, broad uncus, the very long brachiola, and the presence of subterminal process of sacculus. A similar process is found in some tropical genera, e.g., *Apotoforma* and *Brachioha* but the uncus, tuba analis, and aedeagus are different."

***Reptilisocia* DIAKONOFF, 1983**

Reptilisocia DIAKONOFF, 1983, Zool. Verh. Leiden, **204**: 70, t. sp.: *Spatalistis paryphaea* MEYRICK, 1907, India: Assam; two species included. **OR**

Diagnosis

In the original description, DIAKONOFF (1983) compared *Reptilisocia* with *Trophocosta*. He mentioned that it differed from the latter by the following: "Socia very long, pending, ribbon-like, gradually narrowing. Tuba analis long and tubular or spindle-shaped. Sacculus denticulate, not densely bristled. Transtilla, a simple narrow band, or a broader band with median point on upper edge. Aedeagus, a short and thick hook. Signum, a thin long horn upon a dilated base. Forewing in male with a kind of costal fold formed of closely appressed hair-scales. Veins 3 and 4 stalked, veins 7 and 8 stalked or separate. Hind wing with veins 3 and 4 stalked, 6 and 7 closely approximated towards base of long-stalked, with discoidal receding."

***Rubidograptis* RAZOWSKI, 1981**

Rubidograptis RAZOWSKI, 1981, Acta zool. cracov., **25**(14): 324; t. sp.: *Rubidograptis regulus* RAZOWSKI, 1981, Nigeria; monotypic. **AFR.**

Diagnosis

RAZOWSKI (1981) compared *Rubidograptis* with *Russograptis*. *Rubidograptis* can be distinguished by its completely atrophied gnathos; the two genera also differ in the shapes of socii and vinculum. *Rubidograptis* is characterized by a slender socius with median base and the knife-like sclerite of vesica (a probable autapomorphy).

***Rubrograptis* RAZOWSKI, 1981**

Rubrograptis RAZOWSKI, 1981, Acta zool. cracov., **25**(14): 328; t. sp.: *Rubrograptis recedenscenta* RAZOWSKI, 1981, Nigeria; two species included. **AFR.**

RAZOWSKI (2004) - diagnosis, redescription.

Diagnosis

(RAZOWSKI 2004) compared *Rubrograptis* with *Plinthograptis* and *Russograptis*, indicating that they share one supposed synapomorphy, i.e., the distally strongly curved coecum penis. *Rubrograptis* is characterized by the following putative autapomorphies: the very large tuba analis with numerous short setae; the very short valva; and the presence of a slender process at the base of the disc of the valva accompanied by a small hairy patch. See also remarks for *Nephograptis*.

Russograptis RAZOWSKI, 1981

Russograptis RAZOWSKI, 1981, Acta zool. cracov., 25(14): 322; t. sp.: *Russograptis solaris* RAZOWSKI, 1981, Nigeria; two species included. At present 5 species from Congo and Nigeria known. AFR.

RAZOWSKI (2004) - autapomorphies.

Diagnosis

Russograptis was originally compared with *Rutilograptis* from which *Russograptis* differs in its entirely atrophied gnathos and uncus, and its complex socius (with a very broad dorsolateral part). In both genera the transtilla is atrophied. Further putative autapomorphies of *Russograptis* are the broad cluster of short cornuti, the fusion of bases of cornuti; and the anellus minutely spined ventrally at the bases of the socii.

Rutilograptis RAZOWSKI, 1981

Rutilograptis RAZOWSKI, 1981, Acta zool. cracov., 25(14): 322; t. sp.: *Rutilograptis cornesi* RAZOWSKI, 1981, Nigeria; monotypic. At present two species (Congo, Nigeria). AFR.

Diagnosis

Rutilograptis was compared with *Rubidograptis* and *Russograptis* by RAZOWSKI (1981, 2004). The large sclerite of the ductus ejaculatorius is a putative synapomorphy of the three genera. Putative autapomorphies for *Rutilograptis* are the dentate ventral edge of cucullus; the presence of a concave sclerite on the subcostal part of the valva; and the hairy patch (probably a specialised pulvinus) situated above the caudal angle of the sacculus.

Sanguinograptis RAZOWSKI, 1981

Sanguinograptis RAZOWSKI, 1981, Acta zool. cracov., 25(14): 322; t. sp.: *Sanguinograptis obtrecator* RAZOWSKI, 1981, Nigeria; two species included; now 4 species known (Nigeria, Guinea, Gambia). AFR.

Diagnosis

RAZOWSKI (2004) compared *Sanguinograptis* with *Rubrograptis*, identifying one putative apomorphy, i.e., the large tuba analis free of setae. Additional supposed autapomorphics of *Sanguinograptis* are the very slender distal part of the postbasally broad socius, the concave terminal edge of the tegumen; the submembranous, subtriangular caudal part of the valva; the very short postzonal part of the aedeagus; and the arch-shaped, slender transtilla.

Sclerodisca RAZOWSKI, 1964

Sclerodisca RAZOWSKI, 1964, Acta zool. cracov, 9(5): 395, t. sp.: *Sclerodisca papuana* RAZOWSKI, 1964, East Papuan Islands; monotypic; now two species included, AU.

Diagnosis

According to RAZOWSKI (1966), *Sclerodisca* is close to *Asterolepis* as one can judge based on the similar genitalia, but they differ in wing venation. That diagnosis can be augmented as follows: venation similar to *Spatalistis* and *Berylllophantis* in which the hindwing M3-CuA1 are stalked; *Sclerodisca* is distinct from *Spatalistis* and *Berylllophantis* in the presence of a peculiar organ of the cubital branch of the median cell of the forewing and a strongly setose proximal edge of the hindwing; this part of the wing is strongly expanding outwards to middle. *Sclerodisca* and *Asterolepis* have similar valvae with a setose lobe above the sacculus and a broad brachiole, but the two have different socii (large, posterolateral in *Sclerodisca*) moreover, *Sclerodisca* has a large blade-shaped signum and a cup-shaped proximal part of the sternigma.

Spatalistis MEYRICK, 1907

Spatalistis MEYRICK, 1907, J. Bombay Nat. Hist. Soc., 17: 978, t. sp.: *Spatalistis rhopica* MEYRICK, 1907, India; two species included. Now 21 species distributed in whole Palaearctic region, and from India to New Guinea. PAL. OR/AU.

RAZOWSKI (1966, 2008), COMMON (1965) redescrptions.

Diagnosis

DIAKONOFF (1939) mentioned only that *Spatalistis* is 'related to *Tymbarcha* and perhaps correlated with *Argrotoza*'. RAZOWSKI (2008) provides the following diagnosis: 'Similar and closely related to *Acleris* but usually with distinct uncus and some stalked veins (M3-CuA1 in both pairs of wings); in the genitalia it differs by the following supposed autapomorphies; the distal part of the disc of the valva without hair, and the basal part of brachiole slender or constricted.'

Tortrix LINNAEUS, 1758

Tortrix LINNAEUS, 1758, Systema Naturae, 10(1): 530; t. sp. *Phalaena Tortrix viridana* LINNAEUS, 1758, Europe; numerous species included; now two species representing the genus. PAL.

Heterognomon LEDERER, 1859, Wien. ent. Mschr., 3: 242, 247; t. sp.: *Phalaena Tortrix viridana* LINNAEUS, 1758, Europe; monotypic

RAZOWSKI (1966, 1987, 2002, 2008) - redescrptions.

Diagnosis

RAZOWSKI (2008) provided the following, "Probably closest to *Aleimma* but with drooping socii and a short spined termination of the sacculus in male genitalia and long, slender bristles of the median part of the papillae anales in the female. Its probable autapomorphies are the broad, submembranous transtilla and the very broad sterigma."

Trophocosta RAZOWSKI, 1964

Trophocosta RAZOWSKI, 1964, Acta zool. cracov., 9(5): 392, t.sp.: *Spatalistis nummifera* MEYRICK, 1910, New Guinea, four species included. Now 10 species known, distributed from Ceylon to New Guinea. OR/AU

RAZOWSKI (1966) - redescription

Diagnosis

Trophocosta was compared originally with the *Spatalistis* group of genera (i.e., *Spatalistis* and *Vetionifer*)

Venation as in *Spatalistis* (veins M3-Cu1A in both pairs of wing stalked) but *Trophocosta* with strongly reduced costa of valva and brachiola (similarly as in *Reptilisocia*) but with distinct neck of the valva followed by a broadening terminated in a caudal process.

Tymbarcha MEYRICK, 1908

Tymbarcha MEYRICK, 1908, J. Bombay. Nat. Hist. Soc., 18: 622, t. sp. *Tymbarcha cerinopa* MEYRICK, 1908, India: Assam, monotypic, now three species included. OR

RAZOWSKI (1966) - redescription

Diagnosis

RAZOWSKI (1966) compared *Tymbarcha* with *Croesia* (= *Acleris*) from which it differs in the venation (*Tymbarcha* with forewing R4-R5 and M3-CuA1 and hindwing M3-CuA1 stalked) and female genitalia (*Tymbarcha* with short apophyses anteriores). HORÁK & SAUTER (1979) compared *Berylllophantis* with *Tymbarcha*, indicating that the latter can be distinguished by the broad brachiola

Vellonifer RAZOWSKI, 1964

Vellonifer RAZOWSKI, 1964, Acta zool. cracov., 9(5): 388, t. sp. *Vellonifer doncasteri* RAZOWSKI, 1964, India, Khasias; monotypic, known from India, Nepal, and Sumatra. OR.
 RAZOWSKI (1966, 1990) - redescription, diagnosis.

Diagnosis

This genus was originally compared with *Spatalistis* (venation, facies) and *Eboda* (s.l.; subscaphium large, transtilla bases broad). RAZOWSKI (1966, 1990) added the following characters: the shape of socius which is distinctly sclerotized, provided with apical thorn, and its lateropostmedian position on tegumen, supposing that they are autapomorphies of *Vellonifer*.

Schoenotenini

Antigraptis MEYRICK, 1930

Antigraptis MEYRICK, 1930, Exotic Microlepid., 3: 316; t. sp. *Antigraptis hemicrates* MEYRICK, 1930, Nova Guinea. AU.

Diagnosis

DIKONOFF (1960) transferred *Antigraptis* from Tortricinae to Schoenotenidae. According to DIKONOFF (1960), although the male genitalia remain unknown, the female genitalia and especially the facies and the venation indicate that *Antigraptis* is close to *Diactenis*, *Antigraptis*, *Homalernis*, and *Proactenus* together forming a natural, compact group of aberrant and specialised genera. The unusual venation of the hindwing is very characteristic.

Archactenus DIAKONOFF, 1960

Archactenus DIAKONOFF, 1960, Nova Guinea, Zool., 4: 74; t. sp.: *Schoenotenes centrostricta* DIAKONOFF, 1941, New Guinea; two species included. AU

Diagnosis

According to DIAKONOFF (1960), the external characters and venation are as in *Proactenus*, but *Archactenus* has very long labial palpi in the female, a pointed forewing, and the male genitalia are of the *Protarchella* type. The genus is intermediate between little specialized *Protarchella*, on one side, and *Proactenus* of the aberrant *Diactenis* group, on the other. Apparently this group is an early offshoot of the base of the *Schoenotenes* stock; along, peculiar veins of modification by an aberrant neurulation of the hindwing this offshoot

has led ultimately to *Diactemus*." DIAKONOFF (1969) transferred this genus to *Schoenotenus*.

***Barygnathella* DIAKONOFF, 1956**

Barygnathella DIAKONOFF, 1956, Verh. Konin. Neder. Akad. Wetens., (C) **59**: 648; n. sp.: *Schoenotenus anthracospila* DIAKONOFF, 1954, New Guinea; 12 species, now 26 species included. ORAU.

Diagnosis

DIAKONOFF (1956) stated "With the external characters of *Schoenotenus* MEYRICK, 1908, but with the genitalia widely differing." He further pointed out that *Barygnathella* is "a well defined group of species, easily characterised by the peculiarities of the male genitalia" and that "females are less easy of recognition, but the cestum, when present, is very characteristic." DIAKONOFF (1956) described and illustrated his new species, *Barygnathella mellosa*, to illustrate this genus. In male genitalia "the uncus with bifid or bilobed top, without modified long hairs or bristles; hamus short; gnathos usually complicated, its arms ... with flattened prominences or processes; valva with an apical patch of simple hairs, and with a median, obliquely oval, isolated dense cluster of bifid scales; cornutus a single long spine, sometimes absent. Lodix [??], a transverse plicate plate; cestum, a rather long, semi-cylindrical sclerite, sometimes with a short apical branch, penetrating into orifice of the ductus seminales."

***Brongersmia* DIAKONOFF, 1972**

Brongersmia DIAKONOFF, 1972, Zool. Meded., **47**: 427; n. sp.: *Brongersmia polytropia* DIAKONOFF, 1972, New Guinea; monotypic. AU.

Diagnosis

In the original description DIAKONOFF (1972) compared *Brongersmia* with *Schoenotenus*, indicating that the two are identical in external characters, but *Brongersmia* can be distinguished in "differing by the specialized male genitalia". DIAKONOFF (1972) also stated that *Brongersmia* is "a form, apparently intermediate between *Campotenes*, with similarly complicated gnathos but also with long hamus and double harpes, and *Barygnathella*, with similarly double harpes, but with very short or obliterate hamus. The dentate process of gnathos is unique." The female genitalia of *Brongersmia* are similar to those of *Barygnathella*, with a large complex sterigma and simple, proportionally short, remaining parts of the bursa copulatrix.

Campotenes DIAKONOFF, 1960

Campotenes DIAKONOFF, 1960, Nova Guinea (Zool.), 4: 61; t. sp.: *Schoenotenes microphthalmus* DIAKONOFF, 1954, New Guinea, two species included; now four species known. AU

Diagnosis

DIKONOFF (1960) describes *Campotenes* as "with the external characters of *Schoenotenes* but differing by the male genitalia". He further states that the genus is "a somewhat heterogeneous group consisting of species more or less intermediate between *Campotenes* gen. nov. and *Barygnathella* Diak., but distinct and very characteristic by the robust, hooked and furcate uncus." According to illustration in DIAKONOFF (1960), the male genitalia lack hamuli, the terminal parts of the gnathos bear processes, and the valvae have a group of setae at the end of sacculus.

Choristenes DIAKONOFF, 1954

Choristenes DIAKONOFF, 1954, Verh. Konin. Neder. Akad. Wet., (2)49(4): 29; t. sp.: *Choristenes melitoptila* MEYRICK, 1938, New Guinea; monotypic. AU.

Diagnosis

According to DIAKONOFF (1954), *Choristenes* is "A development of *Schoenotenes* MEYRICK, sufficiently distinct by venation [in forewing R4-R5 approximate basally, M3-CuA1 in both wings stalked - in *Schoenotenes* separate]. Genitalia of genotype: Ostium split. Limen narrow, bent in middle, forming a small subquadrate plate behind. Ductus bursae very narrow, extremely long, two narrow sclerotized ceca along upper part. Bursa copulatrix small, long, spheroid." The male is unknown. The genus requires re-examination as some similarities in the shape of female genitalia can be found in other genera, e.g., *Proselena*.

Copidostoma DIAKONOFF, 1954

Copidostoma DIAKONOFF, 1954, Verh. Konin. Neder. Akad. Wet., (2)49(4): 30; t. sp.: *Copidostoma chrysodoris* DIAKONOFF, 1954, New Guinea, monotypic. AU

Diagnosis

The original diagnosis states that *Copidostoma* is "A development of *Schoenotenes*, differing by long ascending palpi." Other characters are similar to *Schoenotenes*. The genus requires re-consideration. The male is unknown. Based on the drawing of the type species (DIAKONOFF 1954), the female genitalia are characterized by a broad elaborate sternigma,

lack of a cestum, and a signum in the form of a broad blade, similar to that of *Metachorista ursula* DIAKONOFF, 1954, figured in the same paper

Cornuticlava DIAKONOFF, 1960

Cornuticlava DIAKONOFF, 1960, Nova Guinea (Zool.), 4: 58; t. sp.: *Schoenotenes chrysoconis* DIAKONOFF, 1954, New Guinea, five species; at present eight species known. AU, COMMON (1965) - redescription.

Diagnosis

In the original diagnosis, as in diagnoses of several other genera, we find an identical phrase about its similarity to *Schoenotenes* (imprecise differences, only in the male genitalia). COMMON (1965) discussed the importance of the free arms of the gnathos and suggested that if they prove to be ham, "little would remain to separate the two genera." In *Cornuticlava* the uncus, gnathos, and transtilla are strong and heavily sclerotized; the socii are atrophied; the valva has specialized scales forming a dense cluster dorsally to end of sacculus (a possible synapomorphy with *Epitrichosma*) and a variably folded or convex structure of the posterior part of the disc; and a densely spiny, transversely folded sterigma (illustrated in one species by COMMON). The signum resembles that in *Epitrichosma*

Diactenis MEYRICK, 1907

Diactenis MEYRICK, 1907, J. Bombay Nat. Hist. Soc., 17: 979; t. sp.: *Diactenis pteroneura* MEYRICK, 1907, monotypic; now 12 species included. OR/AU.

Cancanodes MEYRICK, 1922, Exotic Microlepid., 2: 498; t. sp.: *Cancanodes orthometalla* MEYRICK, 1922, Fiji.

DIAKONOFF (1939, 1952, 1954), COMMON (1965), RAZOWSKI (1966, *Cancanodes*) - redescriptions.

Diagnosis

On the basis of wing venation, DIAKONOFF (1939) transferred *Diactenis* to Chlidanotinae, but he did not compare it with any chlidanotine genus. DIAKONOFF (1954) latter concluded that *Diactenis* is "a development of the *Schoenotenes* type. A considerably specialised form... All [species] have in common small size and pale ochreous or whitish colouring." COMMON (1965) also placed *Diactenis* in *Schoenotenini* and stated that the very narrow hindwing, the vestiture of the wings, and wing venation (extremely long fork of anal veins in forewing bound with scent organ situated between them in the type species and the peculiar median cell of hindwing) are unusual features of *Diactenis*. Other important characters of *Diactenis* are the broad, short, and often bifid uncus; the broad processes of end part of arm of gnathos; and the well sclerotized transtilla with its arch-shaped me-

dian part flanked by a pair of ventral processes. Females have a rather moderately sclerotized sterigma, without a signum.

Dipterina MEYRICK, 1881

Dipterina MEYRICK, 1881, Proc. Linn. Soc. N. S. W., 6: 527, New Zealand; t. sp.: *Dipterina imbriferana* MEYRICK, 1881, monotypic AU.

Diagnosis

In his description of the tribe, COMMON (1965) wrote that the larvae of *Proselena*, *Prothelymna*, and *Dipterina* are closely related. DIAKONOFF (1939) treated this genus as a synonymy of *Cnephasia* C. REIS 1826, *Cnephasiini*.

Eptirichosma LOWER, 1908

Eptirichosma LOWER, 1908, Trans. R. Soc. S. Austral., 32: 320; t. sp.: *Eptirichosma neurobapta* LOWER, 1908, Australia, Queensland; monotypic; now 13 species included AU.

DIAKONOFF (1972) - redescription.

Diagnosis

COMMON (1965) mentioned that *Eptirichosma* and *Cornutioclava* belong to the *Schoenotenes* group of genera, and concluded that harni do not occur in any Australian Schoenotenini. According to DIAKONOFF (1972) the differences between *Eptirichosma* and *Barygnathella* are the narrower forewing, the more pointed median cell, and smaller characters in venation; in this aspect *Barygnathella* is similar to *Schoenotenes*. The male genitalia of *Eptirichosma* differ from those of *Barygnathella* in the H-shaped gnathos giving it "a paired appearance". Important characters of *Eptirichosma* are the presence of a strong terminal or subterminal distinctly sclerotized processes of the arm of the gnathos, the small socii, the groups of dense, bifid, transformed scales of the distal part of the sacculus (and adjacent part of valva) and the terminal part of the valva; and the disc sparsely hairy. The shape of the sterigma is species-specific; the ductus bursae usually has a twisted submedian part; and the signum is comprised of a large blade.

Homalernis MEYRICK, 1908

Homalernis MEYRICK, 1908, J. Bombay Nat. Hist. Soc., 18: 620, t. sp.: *Homalernis semaphora* MEYRICK, 1908, India: Assam; monotypic, now two species known. OR.

DIAKONOFF (1939, regarded it "as belonging to the Eucosmidae"), 1960 (in Schoenotenini) - redescriptions.

Diagnosis

DIKONOFF (1960) concluded that wing venation of *Homalernis* resembles that in *Diactenis*, and the female genitalia (male unknown) 'are very close to *Metachorista*, in spite of the unique feature of *Homalernis*, a double signum." COMMON (1965) concluded that "there seems to be little doubt that *Homalernis* is correctly placed in Schoenotenini, and that *Proselena* and its allies are nearly related to *Homalernis*."

Litotenes DIKONOFF, 1973

Litotenes DIKONOFF, 1973, K. Ned. Akad. Wet., C(76)(1): 551; t. sp.: *Litotenes ioplecta* DIKONOFF, 1973, Papua New Guinea, monotypic. AL

Diagnosis

DIKONOFF (1973) originally compared *Litotenes* with *Schoenotenes* (the two share similar facies and wing venation), but *Litotenes* has "simplified genitalia, strongly resembling those of the Chldanotinae." *Litotenes* also could be compared with *Epitrichosma*: the two genera have similar valvae especially a distinct group of transformed bristles at the end of the sacculus and a smaller group (less dense, built of simple setae) at the end of the valva dorsally, and a similar transtilla. In *Litotenes* the uncus has three groups of minute thorns at the end of the lateral arm and the terminal plate whereas in *Epitrichosma* the lateral arms terminate in large processes and often additional median lobes, and the terminal plate is ill-defined. Similar characters also are found in *Barygnathella*, but its gnathos is different. The female of *Litotenes* is unknown.

Metachorista MEYRICK, 1938

Metachorista MEYRICK, 1938, Trans. R. Ent. Soc. London, 87: 510; t. sp.: *Metachorista ursula* MEYRICK, 1938, Papua New Guinea; monotypic; now 11 species included, all from New Guinea. AU.

DIKONOFF (1954, 1973) - redescriptions

Diagnosis

DIKONOFF (1954) suggested that *Metachorista* is 'a development of *Schoenotenes* MEYRICK, characterised by neuration, narrow wings and small size. Mistaken by MEYRICK for an *Eucosmid* genus (and placed by him in the vicinity of *Herpystis*)." In the hindwing Rs-M1 are long stalked, and M2-M3 are connate. The uncus is strong, expanded terminally; soci are absent (e.g., in the type species) to small or moderate, the gnathos arms are separate or connected terminally, the transtilla is simple (similar to that of *Oligotenes*), and the valva has a large group of setae above the end of the sacculus and a setose area at the end dorsally (with some exceptions, e.g. *M. hierophantis* DIKONOFF, 1954).

Neotenes DIAKONOFF, 1960

Neotenes DIAKONOFF, 1960, Nova Guinea (Zool.), 4: 44, t. sp. *Neotenes canescens* DIAKONOFF, 1954, New Guinea; monotypic; now two New Guinean species included. AU

Diagnosis

Neotenes was placed by DIAKONOFF (1960) in Tortricidae, but he (DIAKONOFF 1969) latter transferred it to Schoenotenini

The tegumen of the type species has two pairs of long terminal setae; a bipartite uncus; lacks hamuli; and the "gnathos [is] short, unpaired, [with the] middle dilated into a pad." The posterior half of the valva has large transformed setae and spines. The female is unknown.

Nesoscopa MEYRICK, 1926

Nesoscopa MEYRICK, 1926, Trans. Ent. Soc. London 74: 271; t. sp.: *Nesoscopa exors* MEYRICK, 1926, Rapa Island; monotypic; now two species included. AU.

Diagnosis

According to DIAKONOFF (1954), *Nesoscopa* is "Apparently a development of *Schoenotenes* MEYRICK, structurally very near to *Proselena* MEYRICK; also allied to *Stenotenes* gen. nov., and to *Metachorista* MEYRICK." CLARKE (1971) illustrated *N. exors* and mentioned that the uncus, socii, and transtilla are peculiar. The uncus is broad basally, rounded apically, and armed with a pair of subterminal, lateral processes; the socii are slender with two apical hairs; the gnathos has a terminal plate larger than the lateral arms; the transtilla is slender, V-shaped medially; and the valva is slender. Sterigma sclerotized proximally and laterally, median part of ductus bursae sclerotized, signum absent.

Oligotenes DIAKONOFF, 1954

Oligotenes DIAKONOFF, 1954, Verh. Konin. Neder. Akad. Wet. (2)49(4): 10; t. sp.. *Oligotenes polylampes* DIAKONOFF, 1954, New Guinea; two species, now five species from New Guinea included. AU

Diagnosis

DIAKONOFF (1954) originally diagnosed *Oligotenes* as "with external characters of *Schoenotenes* MEYR., but considerably differing by the specialized male genitalia" and that it is "a strongly specialized form of dubious affinity." The male genitalia are similar to those of *Metachorista*, but the valva has only a subterminal group of setae, and the sacculus has a free termination. The female lacks a signum, and the short sterigma resembles some *Proselena* and *Diactenis*. In wing venation all veins are separate.

Palaeotoma MEYRICK, 1881

Palaeotoma MEYRICK, 1881, Proc. Linn. Soc. N.S.W., 6: 422; t. sp.: *Palaeotoma styphelana* MEYRICK, 1881, Australia: New South Wales. AU.

Trachyptila TURNER, 1916, Trans. R. Soc. S. Austral., 40: 519; t. sp.: *Trachyptila melanosticha* TURNER (= *Palaeotoma styphelana* MEYRICK, 1881), Australia: Victoria.

DIAKONOFF (1952, 1954), COMMON (1965) - redescriptions

Diagnosis

DIAKONOFF (1952, 1954) compared *Palaeotoma* with *Proselena* and *Paraselena*. He latter (DIAKONOFF 1960) excluded *Palaeotoma* from Schoenotenini. COMMON (1965) discussed mainly the venation, comparing *Palaeotoma* with *Cornuticlava* (similarity in position of M-stem between M1 and M2, heavily sclerotized transtilla of unusual shape, and the signum). In contrast with *Proselena*, the uncus of *Palaeotoma* is large; the valva is elongate, simple, with a short brachiola and a large tuft of hair; and the aedeagus is slender, with a dorsolateral process. The complex transtilla with ventral and dorsal setose lobes somewhat similar to those of *Proselena*, and the presence of a brachiola may represent putative autapomorphies for *Palaeotoma*.

Proactenis DIAKONOFF, 1941

Proactenis DIAKONOFF, 1941, Treubia, 18: 427; t. sp.: *Proactenis tricomma* DIAKONOFF, 1941, Indonesia: Java; three species included; now four species. OR/AU.

DIAKONOFF (1954) - redescription

Diagnosis

In his original description DIAKONOFF (1941) proposed that *Proactenis* is intermediate between *Diactenis* and *Schoenotenes* and is "a distinct and uniform genus. Differs by vertical upper part of transverse vein in hindwing, besides: from the first by much shorter veins in hindwing, the distal cell being larger, by the origin of vein 5 in hindwing; in *Diactenis* from before upper 1/3 to before 1/2 of the distance between 4 and 6+7...; from *Schoenotenes* by absence of ocelli and by neuration of hindwing? Distinct from *Proselena* MEYR. by scale-tufts in forewing and vein 3 in hindwing from angle, vein 5 remote from 4."

DIAKONOFF (1954) gives the following diagnosis: "Intermediate between preceding genus [*Diactenis*] and *Schoenotenes*, also correlated with *Proselena*." DIAKONOFF (1954) illustrates the venation of the type species which is somewhat similar to that of species of *Palaeotoma*.

Proselena MEYRICK, 1881

Proselena MEYRICK, 1881, Proc. Linn. Soc. N.S.W., 6: 421; t. sp.: *Proselena annosana* MEYRICK, 1881, Australia: New South Wales; monotypic; now two species included. AU

Paraselena MEYRICK, 1910, Proc. Linn. Soc. N S W, **65**: 164, t. sp.: *Paraselena thamnas* MEYRICK (= *Proselena tenella* MEYRICK, 1910) Australia: New South Wales
 DIAKONOFF (1939, 1954), COMMON (1965) - redescriptions.

Diagnosis

DIAKONOFF (1954) wrote: "Nearly allied to the following [*Paraselena*, ?*Palaeotoma*, ...], this genus is a specialised off shoot of the *Schoenotenes* branch. The transtilla in *Proselena amosana* is of same type as in *Paraselena thamnas*, and shows a correlation with the genus *Stenotenes*." DIAKONOFF (1954) also regarded *Paraselena* as a distinct genus. COMMON (1965) suggests that *Proselena* is closely related to *Nesoscopa*, and on the basis of larval morphology, he concluded that *Prothelymna* and *Dipterina* are also closely related. Similar to DIAKONOFF (1939, 1952), COMMON (1965) compared *Proselena* with *Schoenotenes*. Wing venation of *Proselena* is very similar to that of *Syncratus* and *Tracholena*, but in *Proselena* forewing veins R4 R5 are short-stalked or approximate, whereas in *Syncratus* and *Tracholena* they are separate. In *Proselena* the transtilla is strongly sclerotized with pair of long ventral processes, which in *Tracholena* are absent, or a single median lobe occurs; the arms and terminal plate of the gnathos are small and simple, whilst in the two other genera the arms are spiny or with projections. In *Proselena* there is a single signum, in *Syncratus* there are two; and in *Diactemus* the signum is absent.

Protarchella DIAKONOFF, 1956

Protarchella DIAKONOFF, 1956, Verh. Konin. Neder. Akad. Wet., (C) **59**: 643, t. sp.:
Protarchella anturhopa DIAKONOFF, 1956, New Guinea; three species included; now 17 species from Indonesia and New Guinea known. AU/OR

Diagnosis

Protarchella was originally characterised by DIAKONOFF (1956) as "An interesting genus, showing an intermediate correlation of the family [Schoenoteniidae] with the Tortricidae. The genitalia of the two sexes are simple and little specialized. The position of vein 8 in the forewing is only a specific character." From the generalised original illustrations, one can describe the male genitalia as follows: uncus slender, sparsely hairy, socius broad; hamus absent; gnathos slender with arm thorny posteriorly; valva rather slender, sparsely hairy; sacculus simple, with small terminal process; median part of transtilla minutely thorny. The female genitalia have the sterigma as a simple plate, the ductus bursae with a short sclerite posteriorly; and the signum a small blade.

Prothelymna MEYRICK, 1883

Prothelymna MEYRICK, 1883, Trans. Proc. New Zealand Inst., 15: 57, t. sp.: *Prothelymna nephelotana* MEYRICK, 1883. *Pteris antiquana* WALKER, 1863, New Zealand; two species included. AU.

Diagnosis

COMMON (1965) suggested that *Prothelymna* is closely related to *Nesoscopa* and that the larvae of *Proscelena*, *Prothelymna*, and *Dipterina* are all very similar, suggesting a close relationships among the three genera.

Rhabdotenes DIAKONOFF, 1960

Rhabdotenes DIAKONOFF, 1960, Nova Guinea (Zool.), 4: 46, t. sp.: *Schoenotenes pachydesma* DIAKONOFF, 1954, New Guinea; nine species placed; now 14 species included, all from New Guinea. AU.

Diagnosis

DIAKONOFF (1960) described *Rhabdotenes* as 'with the characters of *Schoenotenes* but considerably differing by the specialized genitalia in the two sexes', and as 'a specialized form nearly allied with *Rhopalotenes*, with characteristic, well-developed hamuli. The female genitalia of *Rhabdotenes* are highly variable, similar to those of *Rhopalotenes*.'

Rhopalotenes DIAKONOFF, 1960

Rhopalotenes DIAKONOFF, 1960, Nova Guinea (Zool.), 4: 44; t. sp. *Harmologa halimorhithia* MEYRICK, 1938, New Guinea; 4 species from New Guinea included; now same species known. AU.

Diagnosis

Rhopalotenes was described as 'with the characters of *Schoenotenes* but considerably differing by the specialized genitalia in the two sexes', and as 'a strongly specialized form with remarkable uncus and hamuli, forming a direct connection with *Picroxena* MEYRICK, of the Chlidanotini' (DIAKONOFF 1960). The male genitalia of *Rhopalotenes* have very slender uncus and hamuli, lack socii; and have the gnathos an ill-defined, "pending semicircular rod", if present. The female genitalia have a broad ductus bursae with a broad sclerite, and lack a signum (DIAKONOFF 1954).

***Saetotenes* DIAKONOFF, 1960**

Saetotenes DIAKONOFF, 1960, Nova Guinea (Zool.), 4: 54, t. sp.: *Schoenotenes megalops* DIAKONOFF, 1954, New Guinea; seven species; now 14 species included, all from New Guinea. AU

Anthophallodes DIAKONOFF, 1960, Nova Guinea (Zool.), 4: 58; t. sp.: *Schoenotenes dimorpha* DIAKONOFF, 1954, New Guinea; two species included. Established as a subgenus of *Saetotenes*.

Diagnosis

DIKONOFF (1960) described *Saetotenes* as "externally identical with *Schoenotenes*, but differing by the male genitalia. A natural group of species with characteristic valvae; probably this group represents a transition of forms without hamuli to those possessing them." DIAKONOFF (1960) distinguished two subgenera, the nominotypical without a diagnosis, and the other, *Anthophallodes*, by the following with the external characters of *Saetotenes*...; the genitalia are similar except for the following differences. Of the described characters only two are really different: sacculus with a terminal process and aedeagus flanked by two large lateral lobes

***Schoenotenes* MEYRICK, 1908**

Schoenotenes MEYRICK, 1908, J. Bombay Nat. Hist. Soc., 18: 619, t. sp.: *Schoenotenes synchora* MEYRICK, 1908, India: Assam; 32 species known (BROWN 2005).

DIKONOFF (1939, 1954, 1960) - redescrptions

Diagnosis

DIKONOFF (1939) regarded *Schoenotenes* as closely related to *Paraselenia*, *Proselena*, and *Diactenis* without any other comment. In 1954 DIAKONOFF noted that "the genus is easy of recognition, and its representatives can be arranged in a natural series, being with the species of Copromorphid facies; with ovate roughish fore wings, of which the veins are strongly raised, and with semipelluculent hind wings....; DIAKONOFF (1960) presented a "considerably limited" concept of the genus and mentioned that it is possible to assign to *Schoenotenes* "only five species with certainty". He characterized this more limited concept of the genus chiefly by the following characters: uncus simple; socii absent; hamuli "strong, angulate and curved, with a dilated top"; gnathos obliterate; transtilla "a sinuate, triangularly bent rod; valva with one large patch of furcate bristles in the middle of lower edge".

***Stenotenes* DIAKONOFF, 1954**

Stenotenes DIAKONOFF, 1954, Verh. Konin. Neder. Akad. Weten., (2)49(4): 13; t. sp.: *Stenotenes incudis* DIAKONOFF, 1954, New Guinea, two species; now three New Guinean species included. AU.

Diagnosis

In the original description, DIAKONOFF (1954) characterised *Stenotenes* as "a development of *Schoenotenes* MEYRICK, with remarkable venation of hind wing [similar to *Oligotenes*, with a hindwing fold along the radial edge of median cell, but with some veins stalked]." In the type species, the uncus is small and slender; the socii are reduced; the arms of the gnathos are connected terminally; the dorsoterminal part of the valva are differentiated, with transformed scales; and the ventral part of the valva is large and well differentiated. The female is unknown.

Syncratus COMMON, 1965

Syncratus COMMON, 1965, Aust. J. Zool., 13: 669, t. sp.: *Syncratus scepanus* COMMON, 1965; two species incded. AU.

Diagnosis

In COMMON's (1965) diagnosis of *Syncratus* its venation is compared with that of *Proselena*, and the female genitalia are compared with those of *Homalernis* (paired signa, occasionally twisted ductus bursae with small spinose area). *Syncratus* differs from *Homalernis* in the shorter apical segment of labial palpus and in venation. The hindwing venation of *Syncratus* is similar to that in *Proselena*, and the female genitalia "have much in common with *Homalernis*." The male genitalia of *Syncratus* are characterised by a pair of dorsal lobes of the transtilla, the arm of the gnathos with a process, and the valva simple. Female genitalia have a paired funnel-like signa and a small sterigma.

Tracholena COMMON, 1965

Tracholena COMMON, 1965, Aust. J. Zool., 13: 673, t. sp.: *Cnephasia sulfurosa* MEYRICK, 1910, Australia: New South Wales; three species included. AU.

Diagnosis

According to COMMON (1965), *Tracholena* belongs in the *Protarchella*-group of genera and its male genitalia resemble *Protarchella* (spiny gnathos and transtilla, rather simple valva). It differs from *Dipterina* chiefly by the distinct spinulation of the transtilla and the ductus bursae, the latter of which is "extremally spirally twisted or contains a cestum." COMMON (1965) remarked on the similarity of the larvae of *Proselena*, *Proteplyna*, and *Dipterina*. Additionally, *Tracholema* may be characterized by the shape of the transtilla (similar to that of *Proselena*) and the valva; its twisted ductus bursae resembles that of *Syncratus* and may be variable specifically as in some Archipini (e.g., *Clepsis* GUENÉE, 1845).

Dipterina. Additionally, *Tracholema* may be characterized by the shape of the transtilla (similar to that of *Proselena*) and the valva; its twisted ductus bursae resembles that of *Syncratus* and may be variable specifically as in some Archipini (e.g., *Clepsis* GUENÉE, 1845).

Xenotenes DIAKONOFF, 1954

Xenotenes DIAKONOFF, 1954, Verh. Konin. Neder. Akad. Weten., (2)49(4): 111, t. sp.:
Xenotenes micrastra DIAKONOFF, 1954, New Guinea, New Guinea; monotypic. AU.

Diagnosis

There is no diagnosis in the original description. However, from accompanying drawings one can assume that the wings are oval; forewing vein CuA2 is forked; in the male genitalia the uncus is short and broad; the socius is drooping; the arms of the gnathos have a long terminal processes; and the valva lacks spines. DIAKONOFF (1960) suggested that *Xenotenes* is "a strongly specialized form with a unique bifid gnathos and an aberrant neurulation. The affinity of this genus is so far puzzling and uncertain."

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Protyphantes - *Phricanthes*

Tortricini

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REFERENCES

- COMMON I.F.B. 1965. A revision of the Australian Tortricini, Schoenotenini, and Chlidanotini (Lepidoptera: Tortricidae: Tortricinae). *Australian Journal of Zoology*, 13: 613 - 726.
- DIKONOFF A. 1939. The genera of the Indo-Malayan and Papuan Tortricidae. *Zoologische Mededelingen, Leiden*, 21: 111 - 240.
- DIKONOFF A. 1941. Notes and descriptions of Microlepidoptera (I) (7th paper on Indo-Malayan and Papuan Microlepidoptera). *Treubia*, 18(3): 395 - 439, pls 17 - 22.
- DIKONOFF A. 1951. Records and descriptions of Microlepidoptera (4). *Treubia*, 21: 133 - 82.
- DIKONOFF A. 1953. Microlepidoptera of New Guinea. Part II. *Verhandlungen der Koninklijke Nederlandsche Akademie van Wetenschappen, Natuurkunde*, 49(3): 1 - 166.
- DIKONOFF A. 1954. Microlepidoptera of New Guinea, results of the Third Archbold Expedition (American-Netherlands Indian Expedition 1938 - 1939). Part III. *Verhandlungen der Koninklijke Nederlandsche Akademie van Wetenschappen, Natuurkunde*, (3)49(4): 1 - 164.
- DIKONOFF A. 1960. Synopsis of the Schoenotenini, with descriptions of new genera and species (Lepidoptera, Tortricidae, Chlidanotinae). *Nova Guinea, N.S.*, 10(4): 43 - 81, 1 pl.
- DIKONOFF A. 1969. Additional notes on the Microlepidoptera of New Guinea. *Verhandlungen der Koninklijke Nederlandsche Akademie van Wetenschappen, Natuurkunde*, (C)72(2): 152 - 156.
- DIKONOFF A. 1970. A new Tortricid from the Seychelles Islands. *Annales de la Societe Entomologique de France (N.S.)*, 6(4): 995 - 998.
- DIKONOFF A. 1972. Schoenoteninae of the Netherlands Stars Range Expedition 1959 to Central New Guinea (Lepidoptera, Tortricidae). *Zoologische Mededelingen*, 47: 418 - 444.
- DIKONOFF A. 1973. Papuan Tortricidae, chiefly Schoenoteninae (Lepidoptera). I. *Verhandlungen der Koninklijke Nederlandsche Akademie van Wetenschappen, Natuurkunde*, (C)76(5): 536 - 556.
- HORAK M., SAUTER W. 1979. Revision of the genus *Berylophantis* MEYRICK (Lepidoptera: Tortricidae). *Australian Journal of Zoology*, 27: 789 - 811.
- RAZOWSKI J. 1964. A discussion of some groups of Tortricini (Tortricidae, Lepidoptera) with descriptions of new genera and species. *Acta zoologica cracoviensia*, 9: 357 - 415.
- RAZOWSKI J. 1966. World fauna of the Tortricini (Lepidoptera, Tortricidae). *Państwowe Wydawnictwo Naukowe, Kraków*, 576 pp, 41 pls.
- RAZOWSKI J. 1987. The genera of Tortricidae (Lepidoptera). Part I: Palearctic Chlidanotinae and Tortricinae. *Acta zoologica cracoviensia*, 30(11): 141 - 355.
- RAZOWSKI J. 1990. Descriptions and notes on tropical Tortricini (Lepidoptera: Tortricidae). *Acta zoologica cracoviensia*, 33(28): 575 - 594.
- RAZOWSKI J. 2002. Tortricidae (Lepidoptera) of Europe, volume 1 Tortricinae and Chlidanotinae. Frantisek Slamka, Bratislava, 247 pp.

- RAZOWSKI J. 2004. Review of the genera of Afrotropical Tortricidae (Lepidoptera). *Acta zoologica cracoviensis*, **47**(3-4): 167 - 210.
- RAZOWSKI J. 2005. Tortricidae (Lepidoptera) from South Africa. 1: Tortricini and Cochylini. *Polskie Pismo entomol.*, **74**: 495 - 508.
- RAZOWSKI J. 2005b. Notes and descriptions of primitive Tortricini from Tropical Africa, with a list of Asian taxa (Lepidoptera: Tortricidae). *SHILAP Revista de Lepidopterologia*, **33**(132): 423 - 236.
- RAZOWSKI J. 2008. Tortricidae of the Palaearctic Region, Volume 1. General part and Tortricini. Frantisek Slamka, Kraków - Bratislava, 152 pp.
- TUCK K. R. 1988. A taxonomic revision of the genera *Polemograptis* MEYRICK, and *Archigraptis* RAZOWSKI (Lepidoptera: Tortricidae). *Systematic Entomology*, **13**: 115 - 129.

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